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Bulletin 186 **September, 1917**

NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF AGRONOMY

Results of Seed Tests

For 1917

MADE FOR THE
STATE DEPARTMENT OF AGRICULTURE

By F. W. TAYLOR and F. S. PRINCE

NEW HAMPSHIRE COLLEGE
OF
AGRICULTURE AND THE MECHANIC ARTS
DURHAM, N. H.

NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION, DURHAM, N. H.

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SEED TESTS.

Made September 1, 1916, to September 1, 1917.

The provisions of the Pure Seed Law enacted by the General Court in 1909 require the publication annually of a bulletin showing the results of all seed tests made officially during the previous year. The administration of this law is in the hands of the State Commissioner of Agriculture, who has appointed the writer, Agronomist of the Experiment Station, as his regular agent for making all tests and analyses in this state.

During the year ending September 1, 1917, one hundred and three samples of seed were collected and sent in for analysis by an authorized representative of the Commissioner of Agriculture. These samples were secured from twenty-eight dealers in twenty-one different towns, representing each of the ten counties of the state. The samples included 7 of alsike clover, 13 of red clover, 4 of white clover, 4 of barley, 8 of corn, 14 of millet, 3 of oats, 12 of redtop, 26 of timothy, and 9 of miscellaneous seeds.

In the testing and analyzing of seeds, just as in the chemical analysis of fertilizers, it should be remembered that there are certain factors which make exact duplication of results impossible. There are always slight variations in drawing a sample of seed, in sampling the sample, in weighing small fractional parts of it, in the counting and identification of numerous seeds, etc.; there may be also fluctuations in the temperature and humidity of the germinating chamber which may affect the percentage of germination. Methods of analysis may also vary somewhat. For these reasons a slight variation from the guarantee or standard, or from a previous analysis, should not be considered of consequence.

In publishing the results of this year's samples we have again made use of a table of "tolerance of variation" for purity which has been prepared by one of the leading seed laboratories of the country, and which seems to afford a very satisfactory method of allowing or tolerating a reasonable variation in purity tests. The percentage variation for any given sample is determined by the following formula:

$$T = \frac{2(.1 + 100 - P)}{10}$$

in which "T" is the variation tolerated and "P" is the percentage of purity found. This formula applies only to seed having a purity of 50% or greater.

After applying the variations found by the above formula to the results of our tests we have simply used the following terms instead of stating the actual figures in the tabulations:

"Satisfactory," meaning that the difference between our test and the guarantee is within the variation allowed; "Above," meaning that our test, after allowing for the variation, is above the guarantee; "Below," meaning that our test, after allowing for the variation, is below the guarantee.

In the matter of germination a variation of 5% has been allowed in the statement of results and the same terms used as described above for purity.

The writers desire to acknowledge their appreciation of the careful and efficient work of Miss Alice Fletcher, who assisted in making the tests and examinations of the samples herewith reported.

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	Guaranteed
922	TIMOTHY (*Jersey*) ..... A. L. Turcotte, Newmarket, N. H. Alsike, 4,450; Red Top, 1,125; Plantain, 450; Peppergrass, 225; Sheep Sorrel, 225.	S	98.8	S	97
923	TIMOTHY (*Jersey*) ..... A. L. Turcotte, Newmarket, N. H. White Clover, 450; Alsike, 2,475; Kentucky Blue Grass, 450; Pale Smartweeds, 223.	S	98.7	S	93
924	RED TOP (*T9210*) ..... A. L. Turcotte, Newmarket, N. H. Rush, few; Yarrow, 63,900; Chickweed, 1,800; Scirpus sp., 1,350; Verbascum sp., 450; Erigeron sp., 450; Mountainmint, 450; Peppergrass, 450; Timothy, 4,950; Alfalfa, 450.	S	90	S	86
925	TIMOTHY (*Pan American*) ..... J. H. Griffin, Newmarket, N. H. Unknown, 450; Alsike, 2,925; Red Top, 450.	S	99.5	S	95
926	RED CLOVER (*Pan American*) ..... J. H. Griffin, Newmarket, N. H. Curled dock, 360; Sheep Sorrel, 4,230; White Clover, 540; Alsike, 1,890; Timothy, 900; Buckhorn, 180.	S	98	A	92
927	HUNGARIAN ..... J. H. Griffin, Newmarket, N. H. Smartweeds, 180; Pigweed, 180.	A	98	S	80
928	CORN (*Eureka*) ..... Augustus Young, Exeter, N. H.	100	..	97	..
929	HUNGARIAN ..... S. A. Schurman & Son, Portsmouth, N. H. Smartweed, 90; Timothy, 90.	A	98	S	80
930	BARLEY ..... S. A. Schurman & Son, Portsmouth, N. H. Oats, 210; Buckwheat, 45; Sunflower, 15.	S	98	A	90
931	RED CLOVER (*Imperator*) ..... S. A. Schurman & Son, Portsmouth, N. H. Curled dock, 540; Alfalfa, 90; Kentucky Blue Grass, 180; Buckhorn, 1,620; Foxtail, 7,380; Lamb's Quarters, 450; Pigweed, 540; Plantain, 450; White Clover, 180; Alsike, 3,870; Timothy, 2,610; Smartweed, 540; Miscellaneous, 630.	B	97	B	90
932	TIMOTHY (*Imperator*) ..... S. A. Schurman & Son, Portsmouth, N. H. Plantain, 1,575; Alsike, 225; Curled dock, 225.	A	98	A	90
933	RED TOP (*Pan American*) ..... S. A. Schurman & Son, Portsmouth, N. H. Yarrow, 21,150; Woolly Panicum, 900; B. S. Plantain, 450; Lechea sp., 450; Rush, numerous; Timothy, 4,950.	A	90	S	90
934	OATS (*Swedish Select*) ..... S. A. Schurman & Son, Portsmouth, N. H. Barley, 30; Mustard, 15.	A	98	95	..
935	TIMOTHY (*Pan American*) ..... S. A. Schurman & Son, Portsmouth, N. H. Cinquefoil, 450; Alsike, 2,250; Plantain, 225; Kentucky Blue Grass, 1,350; Unknown, 225.	S	99.5	A	90
936	JAPANESE MILLET ..... R. L. Costello, Portsmouth, N. H. Ragweed, 1,260; Foxtail, 540; Smartweed, 90.	S	98	S	92
937	RED CLOVER (*Ace*) ..... R. L. Costello, Portsmouth, N. H. Yellow Foxtail, 1,260; Lamb's Quarter, 270; Buckhorn, 360; Alsike, 90; Timothy, 180; Sheep Sorrel, 90; Yellow Clover, 90.	A	98	S	90

S—Satisfactory.
A—Above.
B—Below.

SEED EXAMINATION, 1917—*Continued.*

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	Guaranteed
938	HUNGARIAN (*H. 80242*) R. L. Costello, Portsmouth, N. H. Smartweeds, 360; Lamb's Quarters, 180; Barnyard Grass, 90.	A	98	B	90
939	RED TOP (*Ace*) R. L. Costello, Portsmouth, N. H. Yarrow, 5,850; Scirpus sp., 4,500; Erigeron sp., 3,150; Cinquefoil, 900; Plantain, 900; Chickweed, 900; Cyperus sp., 450; Brown-eyed Susan, 450; Seedbox, 450; Slender fimbristytis, 450; Rush, numerous.	S	90	B	93
940	CANADA FIELD PEAS R. L. Costello, Portsmouth, N. H.	A	88	A	81
941	WHITE CLOVER (*680*) R. L. Costello, Portsmouth, N. H. Sheep Sorrel, 14,625; Timothy, 33,750; Unknown, 900; Alsike, 19,350; Red Clover, 225; Kentucky Blue Grass, 225; Old Witch Grass, 225; Lamb's Quarters, 2,475.	S	88	S	70
942	TIMOTHY (*Bison*) R. L. Costello, Portsmouth, N. H. Kentucky Blue Grass, 2,700; Plantain, 450; Alsike, 2,250.	A	97	B	94
943	TIMOTHY (*Pine Tree*) R. L. Costello, Portsmouth, N. H. White Clover, 900.	S	99.5	S	95
944	TIMOTHY (*Bay State*) O. B. Tilton, Nashua, N. H. Red Top, 1,125; Alsike, 3,825; Buckhorn, 750; Smartweed, 1,350; Sheep Sorrel, 225; Plantain, 450.	98.6	....	94	..
945	RED TOP (*Globe*) O. B. Tilton, Nashua, N. H. Rush, few; Cinquefoil, 56,700; Yarrow, 24,300; Plantain, 9,900; Blackseeded Plantain, 4,050; Tumbling mustard, 4,050; Shepherd's Purse, 900; Peppergrass, 900; Scircus sp., 900; Mouse ear chickweed, 450; Arabis sp., 450; Woolly Panicum, 450; Erigeron, 450; Eragrostis sp., 450; Poa sp., 1,350; Timothy, 3.3%.	87.3	..	85.5	..
946	RED CLOVER (*Pine Tree*) O. B. Tilton, Nashua, N. H. Buckhorn, 270; Alfalfa, 180; Curled Dock, 90; Foxtail, 90; Timothy, 90; Miscellaneous, 90.	99.4	..	85.5	..
947	JAPANESE BUCKWHEAT O. B. Tilton, Nashua, N. H. Ragweed, 120; Wheat, 30; Barley, 15.	99.3	..	53	..
948	RYE O. B. Tilton, Nashua, N. H. Wheat, 30; Barley, 30; Oats, 15.	99.2	..	94.5	..
949	BARLEY O. B. Tilton, Nashua, N. H. Wheat, 225; Oats, 270.	95.9	..	75	..
950	CORN (*Southern White*) O. B. Tilton, Nashua, N. H.	100	..	94	..
951	WHITE CLOVER Thompson & Hoague, Concord, N. H. Timothy, 7,650; Alsike, 3,750; Plantain, 450; Lamb's Quarters, 225; Sheep Sorrel, 225.	A	97	S	94

S—Satisfactory.
A—Above.
B—Below.

SEED EXAMINATION, 1917—*Continued.*

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	Guaranteed
952	RED CLOVER Thompson & Hoague, Concord, N. H. Timothy, 19,980; Alsike, 11,700; Sheep Sorel, 19,440; Foxtail, 1,800; Wild Buckwheat, 450; Smartweeds, 1,350; Pole Smartweeds, 540; Blackseeded Plantain, 1,620; Lamb's Quarters, 1,620; Cinquefoil, 630; Alfalfa, 90; White Clover, 720; Miscellaneous, 1,800.	B	92	S	90
953	HUNGARIAN Thompson & Hoague, Concord, N. H. Mallow, 270; Smartweed, 90; Green Foxtail, 810; Ragweed, 90.	A	98	S	92
954	RED TOP Thompson & Hoague, Concord, N. H. Cinquefoil, 27,900; Yarrow, 26,100; Blackseeded Plantain, 13,500; Erigeron sp., 5,400; Scirpus sp., 3,150; Sleepy Catchfly, 1,350; Evening Primrose, 450; Venus' looking-glass, 450; Brown-eyed Susan, 450; Rush, numerous; Timothy, 13.09%; Poa sp., 6,750; Canada Blue Grass, 4,500; Kentucky Blue Grass, 900; Red Clover, 450.	68.5	..	91.2	..
955	TIMOTHY Thompson & Hoague, Concord, N. H. Alsike, 3,600; Red Top, 450; Plantain, 1,125; Sheep Sorrel, 225.	A	98	S	96
956	ALSIKE Thompson & Hoague, Concord, N. H. Buckhorn, 4,050; Sheep Sorrel, 3,600; Timothy, 46,125; White Clover, 3,600; Red Clover, 2,050; Yellow Foxtail, 225; Miscellaneous, 675.	S	91	S	90
957	CORN (*Eureka*) Thompson & Hoague, Concord, N. H.	100	..	90	..
958	CORN (*Improved Leaming*) Thompson & Hoague, Concord, N. H.	A	98.5	S	97
960	JAPANESE MILLET Thompson & Hoague, Concord, N. H. Barnyard Grass, 1,260; Ragweed, 2,430; Smartweeds, 180.	S	96.5	S	90
961	ALFALFA Thompson & Hoague, Concord, N. H. Lamb's Quarters, 270; Kentucky Blue Grass, 270; Timothy, 2,160; Yellow Foxtail, 270; Pigweed, 90; Barnyard Grass, 450; Red Clover, 90; Alsike, 540; Unknown, 90.	S	99	S	90
962	RED TOP John B. Varick, Manchester, N. H. Rush, numerous; Sorrel, 3,600; Erigeron sp., 1,800; Yarrow, 1,800; Wood sorrel, 900; Bracted Plantain, 900; Venus' looking-glass, 1,350; Woolly Panicum, 450; Mountainmint, 450; Timothy, 2,250; Slender fescue grass, 450.	B	90	S	88
963	TIMOTHY (*Pine Tree*) John B. Varick, Manchester, N. H.	S	99.5	S	96
964	TIMOTHY (*Durham*) John B. Varick, Manchester, N. H. White Clover, 450; Kentucky Blue Grass, 225.	S	99.5	S	95

S—Satisfactory.
A—Above.
B—Below.

SEED EXAMINATION, 1917—*Continued.*

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	Guaranteed
965	ALSIKE	S	94.7	B	91
	John B. Varick, Manchester, N. H. White Clover, 24,750; Timothy, 9,000; Sheep Sorrel, 3,150; Red Clover, 675; Night flowering Catchfly, 225; Red Top, 450.	A	91	B	96
966	CORN (*Longfellow Flint*)	A	97.6	S	92
	John B. Varick, Manchester, N. H.				
967	MAMMOTH CLOVER (*Ace*)	B	99	B	95
	John B. Varick, Manchester, N. H. Sheep Sorrel, 1,125; Buckhorn, 3,150; Lamb's Quarter, 225; Alsike, 450; Crab Grass, 225; Smartweeds, 225; Blackseeded Plantain, 225.				
968	RYE	A	92	B	93
	John B. Varick, Manchester, N. H. Oats, 105; Wheat, 15; Buckwheat, 30.				
969	CORN (*Sanford White*)	S	98	A	90
	John B. Varick, Manchester, N. H.				
970	RYE	S	91.3	48.5	..
	John B. Varick, Manchester, N. H.				
971	WHITE CLOVER	A	97	S	81
	John B. Varick Co., Manchester, N. H. Alsike, 17,550; Timothy, 20,250; Sheep Sorrel, 9,450; Buckhorn, 1,350; Unknown, 450.				
972	HUNGARIAN	S	90	S	86
	John B. Varick, Manchester, N. H. Smartweeds, 360; Red Clover, 90.				
973	RED TOP	S	99.5	S	95
	John B. Varick, Manchester, N. H. Rush, numerous; Yarrow, 60,750; Mouse ear chickweed, 4,050; Venus' looking-glass, 2,250; Erigeron sp., 1,350; Narrow leaved Mountainmint, 900; Blackseeded Plantain, 900; Timothy, 4,500.				
974	TIMOTHY (*Pine Tree*)	100	..	95	..
	Manchester Hardware Co., Manchester, N. H. Alsike, 675.				
975	CORN (*Leaming*)	100	..	92.5	..
	Manchester Hardware Co., Manchester, N. H.				
976	CORN (*Eureka*)	S	91	S	85
	Manchester Hardware Co., Manchester, N. H.				
977	WHITE CLOVER (*88692*)	A	98	S	92
	Manchester Hardware Co., Manchester, N. H. Sheep Sorrel, 24,300; Timothy, 11,475; Alsike, 22,500; Plantain, 4,050; Buckhorn, 900; Red Clover, 225; Kentucky Blue Grass, 450.				
978	JAPANESE MILLET (*81656*)	A	93	S	80
	Manchester Hardware Co., Manchester, N. H. Green Foxtail, 1,080; Barnyard Grass, 90; Lamb's Quarters, 90.				
979	HUNGARIAN (*H.80242*)	A	98	S	90
	Manchester Hardware Co., Manchester, N. H. Smartweeds, 180; Red Clover, 90; Green Foxtail, 360.				
980	CLOVER (*Ace*)				
	Manchester Hardware Co., Manchester, N. H. Lamb's Quarters, 180; Buckhorn, 270; Trifolium agrarium, 90; Smartweed, 180; Hungarian Millet, 90; Alsike, 90; Sheep Sorrel, 90.				

S—Satisfactory.
A—Above.
B—Below.

SEED EXAMINATION, 1917—*Continued.*

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	Guaranteed
981	RED TOP (*White Mountain*) Walter S. Cass, Suncook, N. H. Yarrow, 26,550; Chickweed, 1,350; Blackseeded Plantain, 900; Mountainmint, 450; Woolly Panicum, 450; Scirpus sp., 450; Corn Speedwell, 450; Venus' looking-glass, 450; Timothy, 900.	A	95	S	90
982	ALSIKE CLOVER (*White Mountain*) Walter S. Cass, Suncook, N. H. White Clover, 5,175; Red Clover, 657; Buckhorn, 675; Lamb's Quarters, 225; Timothy, 3,150; Sheep Sorrel, 675.	S	98	S	92
983	TIMOTHY (*White Mountain*) Walter S. Cass, Suncook, N. H. Alsike, 900; Kentucky Blue Grass, 1,125; Red Top, 450.	S	99.7	B	97
984	OATS (*White Mountain*) Walter S. Cass, Suncook, N. H.	A	99	B	95
985	BARLEY (*White Mountain*) Farmington Cash Store, Farmington, N. H. Oats, 45.	S	99.5	S	98
986	TIMOTHY (*Pan American*) E. T. Willson, Farmington, N. H. Kentucky Blue Grass, 1,350; Alsike, 2,475; Plantain, 2,025.	S	99.5	S	95
987	HUNGARIAN E. T. Willson, Farmington, N. H. Lamb's Quarters, 2,660; Green Foxtail, 1,800; Smartweeds, 2,270; Ragweed, 360; Crab Grass, 180; Juncus sp., 2,700; Pigweed, 90; Unknown, 90.	A	97	S	90
988	JAPANESE MILLET E. T. Willson, Farmington, N. H. Barnyard, 1,170; Green Foxtail, 1,080; Wheat, 90; Buckwheat, 90; Smartweed, 1,260; Ragweed, 360.	S	97	S	90
989	RED TOP E. T. Willson, Farmington, N. H. Yarrow, 35,100; Chickweed, 5,850; Blackseeded Plantain, 1,800; Scirpus sp., 900; Narrow leaved Mountainmint, 900; St. John'swort, 450; Blunt spike rush, 450; Woolly panicum, 450; Venus' looking-glass, 450; Rush, numerous; Timothy, 5,400; Canada Blue grass, 450.	S	90	B	90
990	RED CLOVER (*White Mountain*) H. C. Sanborn, Laconia, N. H. Curled dock, 90; Timothy, 90.	S	99.5	S	94
991	ALSIKE (*White Mountain*) H. C. Sanborn, Laconia, N. H. Timothy, 900; Red Clover, 225; White Clover, 450; Sheep Sorrel, 900; Foxtail, 225.	A	98.5	S	92
992	TIMOTHY (*Durham*) J. P. Putnam & Co., Laconia, N. H. Red Clover, 225; Catnip, 225.	S	99.5	S	96
993	RED CLOVER (*Pan American*) C. S Collins, Bristol, N. H. Buckhorn, 2,790; Crab Grass, 1,710; Docks, 180; Alsike, 180; Miscellaneous, 720.	S	98	S	92
994	TIMOTHY (*Gold Medal*) C. N. Merrill, Bristol, N. H. Kentucky Blue Grass, 675.	S	99.7	S	92

S—Satisfactory.
A—Above.
B—Below.

SEED EXAMINATION, 1917—*Continued.*

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	Guaranteed
995	TIMOTHY (*Pan American*) ..... C. N. Merrill, Bristol, N. H. Red Top, 675; Kentucky Blue Grass, 225; Alsike, 450.	S	99.5	S	95
996	TIMOTHY (*Pine Tree*) ..... J. D. Willey, Milton, N. H. Alsike, 450; Lamb's Quarters, 225.	S	99.5	S	95
997	TIMOTHY (*60455*) ..... O. L. & C. A. White, Mountainview, N. H. Alsike, 2,025; Pale Smartweeds, 1,575; Red Top, 1,125; Kentucky Blue Grass, 450; Plantain, 1,350; Sheep Sorrel, 225.	A	98	92	..
998	CLOVER (*Ace*) ..... O. L. & C. A. White, Mountainview, N. H. Timothy, 360; Alsike, 180; Alfalfa, 90; Buckhorn, 1,080; Lamb's Quarters, 180; Pigweed, 90; Smartweed, 90; Plantain, 180; Sheep Sorrel, 270; Yellow Foxtail, 540; Green Foxtail, 90; Crab grass, 180.	A	98	86	..
999	JAPANESE MILLET ..... C. E. Hodgdon, North Conway, N. H. Ragweed, 540; Smartweed, 90; Green Foxtail, 1,260; Barnyard Grass, 180.	A	98	B	98
1000	OATS ..... D. Whiting & Sons, Wilton, N. H. Barley, 30; Mustard, 30; Smartweed, 60; Wild Buckwheat, 75.	99.2	..	91.5	..
1001	TIMOTHY (*Frontier*) ..... O. P. Prescott, Greenville, N. H. Alsike, 2,250; White Clover, 450; Plantain, 225; Kentucky Blue Grass, 450; Vervain, 450.	S	97	S	92
1002	ALSIKE (*Pan American*) ..... O. P. Prescott, Greenville, N. H. Timothy, 4,275; Red Clover, 2,475; Sheep Sorrel, 225; Foxtail, 225; Miscellaneous.	A	97	S	90
1003	WHEAT (*White Mountain*) ..... Goodnow Bros. & Co., East Jaffrey, N. H. Oats, 15.	A	99	S	90
1004	CLOVER (*Old Home*) ..... Abbott Grocery Co., Keene, N. H. Alsike, 7,875; Buckhorn, 2,700; Timothy, 6,475; Yellow Foxtail, 3,375; Alfalfa, 1,575; Smartweeds, 675; Sheep Sorrel, 1,800; Hungarian Millet, 2,700; Crab Grass, 450; Lamb's Quarters, 3,150; Night flowering Catchfly, 900; Plantain, 225; White Clover, 675; Wild Buckwheat, 225; Unknown, 900.	A	94	S	85
1005	RED TOP (*Mastiff*) ..... Abbott Grocery Co., Keene, N. H. Rush, few; Cinquefoil, 10,350; Yarrow, 6,300; Scirpus sp., 4,500; Blackseeded Plantain, 2,250; Erigeron sp., 900; Chickweed, 900; Venus' looking-glass, 900; Verbascum sp., 450; Brown-eyed Susan, 450; Tumbling mustard, 450; Timothy, 1.07%; Kentucky Blue Grass, 450; White Clover, 450.	S	90	S	89
1006	TIMOTHY (*Old Home*) ..... Abbott Grocery Co., Keene, N. H Alsike, 2,025; White Clover, 450; Red Top, 900; Plantain, 2,025.	A	98	B	94
1007	TIMOTHY (*Mastiff*) ..... Abbott Grocery Co., Keene, N. H. Alsike, 2,025; Red Top, 225; Unknown, 450.	S	99.5	S	96

S—Satisfactory.
A—Above.
B—Below.

SEED EXAMINATION, 1917—*Continued.*

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	Guaranteed
1008	CLOVER (*Mastiff*) Abbott Grocery Co., Keene, N. H. Buckhorn, 1,080; Timothy, 180; Plantain, 90; Sheep Sorrel, 180; Night flowering Catchfly, 180; Alsike, 1,170; Foxtail, 540; Crab Grass, 450; Lamb's Quarters, 270; Smartweeds, 90; Miscellaneous, 270.	A	95	S	88
1009	GERMAN MILLET Abbott Grocery Co., Keene, N. H. Old Witch Grass, 1,080; Lamb's Quarters, 90; Green Foxtail, 180.	A	98.5	B	90
1010	TIMOTHY (*X*) Holbrook Grocery Co., Keene, N. H. Red Top, 56,250; Kentucky Blue Grass, 5,625; Plantain, 6,975; Cinquefoil, 51,075; Alsike, 900; White Clover, 450; Unknown, 4,950.	S	93	S	85
1011	TIMOTHY (*Monadnock*) Holbrook Grocery Co., Keene, N. H. Alsike, 1,575; Red Clover, 1,125; Plantain, 1,125; Peppergrass, 225.	S	99.5	B	96
1012	JAPANESE BUCKWHEAT Holbrook Grocery Co., Keene, N. H. Oats, 60; Wheat, 30; Ragweed, 15.	A	98	S	92
1013	MAMMOTH CLOVER (*XXX*) Holbrook Grocery Co., Keene, N. H. Timothy, 1,350; Alfalfa, 180; Plantain, 450; Alsike, 1,080; Sheep Sorrel; 1,440; White Clover, 270; Crab Grass, 540; Lamb's Quarters, 270; Smartweed, 540; Buckhorn, 630; Bracted Plantain, 90; Foxtail, 2,250; Miscellaneous, 270.	S	96.5	S	90
1014	RED TOP (*XX*) Holbrook Grocery Co., Keene, N. H. Cinquefoil, 88,200; Yarrow, 45,000; Plantain, 12,150; Blackseeded Plantain, 4,950; Roripa sp., 2,700; Lobelia sp., 2,250; Erigeron sp., 1,350; Brown-eyed Susan, 900; Narrow Leaved Mountainmint, 900; Evening Primrose, 450; Shepherd's Purse, 450; Venus' looking-glass, 450; Compositae, 450; Rush, numerous; Poa, sp., 19,350; Woodmeadow, Grass, 450; Timothy, 12.11%.	S	75	S	83
1015	RED TOP (*XXX*) Holbrook Grocery Co., Keene, N. H. Rush, few; Cinquefoil, 29,250; Yarrow, 24,750; Plantain, 5,400; Blackseeded Plantain, 3,600; Brown-eyed Susan, 450; Timothy, 3.55%; Kentucky Blue Grass, 4,500.	A	86	S	86
1016	CLOVER (*XX*) Holbrook Grocery Co., Keene, N. H. Alsike, 6,210; Timothy, 2,250; Foxtail, 1,350; Millet, 5,220; Lamb's Quarters, 270; Night flowering Catchfly, 360; Sheep Sorrel, 900; Curled dock, 1,080; White Clover, 1,170; Buckhorn, 540; Blackseeded Plantain, 270; Smartweeds, 270; Miscellaneous, 1,260.	A	90	S	85
1017	CLOVER (*X*) Holbrook Grocery Co., Keene, N. H. Alfalfa, 270; Ragweed, 90; Alsike, 13,410; Sheep Sorrel, 2,880; Smartweed, 450; Night flowering Catchfly, 1,260; Timothy, 6,120; White Clover, 1,170; Foxtail, 12,420; Lamb's Quarters, 2,160; Blackseeded Plantain, 1,530; 1,530; Buckhorn, 630; Miscellaneous, 1,800.	A	80	S	75

S—Satisfactory.
A—Above.
B—Below.

SEED EXAMINATION, 1917—*Concluded.*

Sample No.	Kind of Seed, Sender, and Kind and Number of Foreign Seeds Found in One Pound.	Purity.		Germination.	
		Found	Guaranteed	Found	anteed Guar-
1018	HUNGARIAN (*X*)	A	95	B	75
	Holbrook Grocery Co., Keene, N. H. Smartweeds, 270; Ragweed, 90; Green Foxtail, 90.				
1019	TIMOTHY (*XXX*)	A	98.5	S	90
	Holbrook Grocery Co., Keene, N. H. Alsike, 1,350; Kentucky Blue Grass, 225; Red Top, 225; Sheep Sorrel, 225; Cinquefoil, 225; Red Clover, 225.				
1020	BARLEY (*Monadnock*)	S	97	S	95
	Holbrook Grocery Co., Keene, N. H. Oats, 720.				
1022	ALFALFA (*Honor Brand*)	S	99.5	S	85
	Rand, Ball & King Co., Claremont, N. H.				
1023	ALSIKE (*A. R. C.*)	A	95.3	S	88.5
	Rand, Ball & King Co., Claremont, N. H. Yellow Trefoil, 675; White Clover, 13,275; Timothy, 10,575; Sheep Sorrel, 675; Red Clover, 225; Buckhorn, 225.				
1024	ALSIKE (*Ace*)	A	96	82	..
	E. Libby & Sons Co., Gorham, N. H. Yellow Trefoil, 4,275; White Clover, 4,950; Timothy, 1,575; Shepherd's Purse, 225; Curled Dock, 225; Kentucky Blue Grass, 225; Miscellaneous, 675.				
1025	WHEAT	B	99	99.5	..
	John Goebel & Sons, Berlin, N. H. Oats, 195; Wild Buckwheat, 15; Barley, 30.				
1026	TIMOTHY (*XX*)	A	98	B	81
	Edson & Kinne, Littleton, N. H. Plantain, 225; Alsike, 225.				

S—Satisfactory.
A—Above.
B—Below.

SUMMARY TABLE SHOWING THE KINDS OF FOREIGN SEEDS FOUND IN SAMPLES EXAMINED IN 1917, AND THE NUMBER OF SAMPLES IN WHICH THEY WERE FOUND.

Names of Foreign Seed.	Names of Samples Examined.									
	Alsike	Barley	Millet.	Oats.	Red Clover.	Red-Top.	Rye.	Timothy.	White Clover.	Miscellaneous.
No. of samples examined	7	4	14	3	13	12	3	26	4	9
Alfalfa	..	..	..	..	6	1	..	..	..	..
Alsike	..	..	..	..	11	..	..	21	4	3
Arabis sp.	..	..	..	..	..	1	..	..	..	..
Barnyard grass	..	..	5	..	..	..	..	..	..	1
Barley	..	..	..	2	..	..	1	..	..	2
Black Bindweed	..	..	..	1	2	..	..	..	..	1
Black-eyed Susan	..	..	..	..	..	5	..	..	..	..
Bracted Plantain	..	..	..	..	..	1	..	..	..	1
Buckwheat	..	1	1	..	..	..	1	..	..	..
Catchfly	1	..	..	..	4	1	..	..	..	..
Catnip	..	..	..	..	..	..	..	1	..	..
Chickweed	..	..	..	..	..	7	..	..	..	..
Cinquefoil	..	..	..	..	1	6	..	3	..	..
Cockle	..	..	..	..	..	..	..	..	..	1
Crabgrass	..	..	1	..	4	..	..	..	..	1
Corn Speedwell	..	..	..	..	..	2	..	..	..	..
Docks	1	..	..	..	6	..	..	1	..	..
Eragrostis sp.	..	..	..	..	..	1	..	..	..	..
Erigeron sp.	..	..	..	..	..	8	..	..	..	..
Green Foxtail	..	..	8	..	1	..	..	..	..	..
Kentucky Bluegrass	1	..	..	..	1	6	..	12	2	1
Lechea sp.	..	..	..	..	..	1	..	..	..	..
Lamb's Quarters	1	..	5	..	9	..	..	2	2	3
Mountainmint	..	..	..	..	..	6	..	..	..	..
Mustards	..	..	..	2	..	2	..	..	..	..
Oats	..	4	..	..	..	..	2	..	..	3
Old Witchgrass	..	..	..	..	..	..	..	..	1	..
Peppergrass	..	..	..	..	..	2	..	2	..	..
Pigweed	..	..	2	..	2	..	..	..	..	1
Ragweed	..	..	7	..	1	..	..	..	..	2
Red Clover	6	..	2	..	..	1	..	3	2	1
Red Top	1	..	..	..	..	..	..	11	..	..
Ribgrass	3	..	..	..	11	..	..	1	2	2
Rugel's Plantain	..	..	..	..	6	11	..	13	2	2
Rush	..	..	1	..	..	12	..	..	..	..
Scirpus sp.	..	..	..	..	..	8	..	..	..	..
Shepherd's Purse	1	..	..	..	..	2	..	..	..	..
Sorrell	6	..	..	..	9	1	..	5	4	2
Smartweeds	..	..	13	..	8	..	..	3	..	2
Timothy	7	..	1	..	11	11	..	3	..	2
Miscellaneous	3	..	3	..	7	10	..	5	2	3
Verbascum sp.	..	..	..	..	..	2	..	..	..	..
Woolly Panicum	..	..	..	..	..	5	..	..	..	..
Wheat	..	1	1	..	..	..	2	..	..	2
White Clover	6	..	..	..	5	2	..	6	..	1
Yarrow	..	..	..	..	..	12	..	..	..	..
Yellow Clover	..	..	..	..	2	..	..	..	..	..
Yellow Foxtail	3	..	1	..	9	..	..	..	..	2
Yellow Trefoil	2	..	..	..	..	..	..	..	..	..

TABLE SHOWING RESULTS OF TESTS AND EXAMINATION OF SAMPLES OF SEEDS SUBMITTED BY THE COMMISSIONER OF AGRICULTURE FROM SEPTEMBER 1, 1916, TO SEPTEMBER 1, 1917.

Kind of Seed.	Total Number.	Purity Test.										Germination Test.			
		Pure Seed.				Foreign Seed.			Inert Matter.						
		Highest per cent.	Lowest per cent.	Average per cent.	Standard per cent.	Highest per cent.	Lowest per cent.	Average per cent.	Highest per cent.	Lowest per cent.	Average per cent.	Highest per cent.	Lowest per cent.	Average per cent.	Standard per cent.
Alsike	7	99.5	91.3	96.6	95.	7.5	.4	2.7	1.2	.1	.5	89.5	78.0	85.0	75-80
Barley	4	99.2	95.9	97.6	99.	3.2	.2	1.9	.9	.0	.5	99.5	75.0	92.0	90-95
Corn	8	100.0	.0	.0	99.	0.0	.0	.0	0.0	.0	.0	97.0	84.5	92.3	85-90
Millett	14	99.8	97.2	98.9	99.	2.2	.1	.8	.6	.0	.2	92.5	39.5	81.3	85-90
Oats	3	99.8	99.2	99.6	99.	.3	.0	.2	.5	.0	.2	95.0	86.0	91.0	90-95
Red Clover	13	99.8	86.7	96.2	98.	9.4	.0	2.8	3.9	.1	.9	98.0	68.5	86.4	85-90
Red Top	12	96.4	69.4	86.0	95.	14.8	.2	3.7	29.9	3.4	10.2	91.5	83.2	87.4	75-80
Rye	3	99.2	97.8	98.4	99.	.9	.0	.5	1.7	.2	1.1	95.5	49.0	79.6	90-95
Timothy	26	99.8	93.7	99.1	98.	3.7	.0	.4	2.6	.0	.4	99.0	81.0	90.6	85-90
White Clover	4	98.1	89.8	93.1	95.	8.3	1.4	5.6	1.9	.5	1.2	91.0	48.5	64.0	85-90
Miscellaneous	9														
Total	103														

SUMMARY.

From the tables on the preceding pages it will be noted that 90 of the 103 samples collected were guaranteed for purity and 84 for germination. In other words, 87 per cent of the seed represented by the samples was sold according to the law as regards purity and 81 per cent as regards germination. These percentages are higher than last year, when they stood at 82 and 66 respectively.

Of the total 90 samples which were guaranteed for purity, 85 of them, or 94 per cent, were found to be up to or above the guarantee.

Of the 84 samples which were guaranteed for germination, 67 of them, or 80 per cent, were found up to or above the guarantee. This is a somewhat better showing than last year.

Among the seeds tested this year alsike clover, millet, oats and timothy were on the average above the standard per cent of purity; while red clover, white clover and redtop were below the standard per cent. As regards germination, the average per cent was up to standard for all kinds of seed except millet, rye and white clover. This would indicate that a considerable quantity of old seed of these kinds is carried over from year to year.

A few samples of redtop were apparently adulterated with timothy. Since timothy costs less per pound than redtop, such a practice would prove profitable for the seedsman. Timothy seeds having much the same shape and color as redtop are difficult to detect, except by the experienced observer. While this adulteration is not particularly objectionable, it is nevertheless unfair because of the difference in price.

AMENDED TEXT OF NEW HAMPSHIRE SEED LAW.

STATE OF NEW HAMPSHIRE.

IN THE YEAR OF OUR LORD ONE THOUSAND NINE HUNDRED AND NINE.

HOUSE BILL . . . . . No. 396

AN ACT

To Regulate the Sale of Agricultural Seeds.

Be it enacted by the Senate and House of Representatives in General Court convened:

SECT. 1. Every lot of agricultural seeds, including seeds of cereals, grasses, forage plants, vegetables, garden plants, and white pine trees, but not including those of other trees, shrubs, and ornamental plants, which is sold, offered, or exposed for sale for seed in bulk or package of one pound or more, within this state, shall be accompanied by a plainly written or printed guarantee, stating first its percentage of purity from foreign seeds and other matter, and second, its percentage of vitality.

SECT. 2. Sellers or dealers in seeds may base their guarantees upon tests or analyses conducted by themselves, their agents, or by the commissioner of agriculture or his agents, *provided* that such tests or analyses shall be made in such a manner and under such conditions as the said commissioner may prescribe.

SECT. 3. The results of all tests or analyses of seeds made by the said commissioner, together with the names and addresses of the persons from whom the samples of seed were obtained, shall be published in reports of bulletins by the commissioner of agriculture or the New Hampshire College experiment station, as the governor and council may determine. The report may contain equitable standards of purity and vitality, together with such information concerning agricultural seeds as may be of public benefit.

SECT. 4. Whoever sells, offers or exposes for sale or for distribution, within this state, any agricultural seeds heretofore named in this act, without complying with the requirements of sections one and two, or whoever, with intention to deceive, wrongly marks or labels any lot of agricultural seeds, including the seeds of cereals, grasses, forage plants, vegetables, garden plants, and white pine trees, but not including those of other trees, shrubs and ornamental plants, as pertains to their percentage of purity and vitality, shall be punished by a fine not exceeding one hundred dollars for the first offense, and not exceeding two hundred dollars for each subsequent offense.

SECT. 5. The provisions of the four preceding sections shall not apply to any person growing, selling, offering or exposing for sale cereals and other agricultural seeds for food.

SECT. 6. The commissioner of agriculture shall diligently enforce the provisions of sections one and four of this act, and in his discretion prosecute offenses against the same.

LABELING.

The law does not apply to the common five and ten-cent packages of garden and flower seeds. Only seeds sold in bulk or in packages of one pound or more are subject to the provisions of the law and are required to be accompanied by a guarantee stating their percentage of purity and vitality.

The guarantee or label may be of any form desired by the seller of the seeds, as a tag, sticker or direct brand upon the container. It must, however, be plainly written or printed, and placed distinctly visible to the purchaser. Each dealer will provide his own labels.

TAKING OF SAMPLES.

To secure a fair average sample of a lot or bulk, take small quantities from all of the bags or from different parts of any particular bulk. Mix thoroughly and take out the sample to be inspected. When the seeds are in bags or large bins, the use of a grain sampler is most convenient, since this will insure getting seeds from the top, middle and bottom alike. Since the report of the analysis is based upon the nature of the sample inspected, it is important that the sample be carefully taken.

SIZE AND AMOUNTS OF SAMPLES.

The size and amount of the samples necessary for a test will depend upon the size and weight of the seeds. About one half ounce or a tablespoonful of the smaller grass and vegetable seeds, like alsike and white clover, redtop, lettuce, onions, radish, turnip etc.; about one ounce or two tablespoonfuls of the larger seeds, like timothy, millet, red clover, alfalfa, rape, etc.; and about four ounces or a small cupful of the cereal grains or vegetable seeds, like oats, barley, corn, peas, beans, etc., should be sent.

TESTS AND EXAMINATIONS.

Section 2 of the law states the provisions under which the tests and analyses shall be made. The Commissioner of Agriculture has appointed F. W. Taylor, Agronomist of the Experiment Station, as the regular agent for making all tests and analyses in this state. The sellers or dealers who desire to base their guarantees upon tests made by themselves or their agents must first secure the approval of the Commissioner of Agriculture of the methods to be used in making the tests, and of the person who is to conduct them.

Although the law makes no provision for the expenses of the seed tests, the Department of Agriculture has arranged with the Experiment Station to have the tests made *free of charge* to all dealers and farmers resident in the state.

SENDING OF SAMPLES.

Samples sent to the Experiment Station for testing should be enclosed in a strong paper envelope and securely fastened. They should not be sent in bottles or glass jars, owing to the danger of breakage. When a number of samples are to be sent they should be put up securely in a single package and forwarded either by parcel post or by express. Each sample sent in should be marked as follows:

Name and address of sender.

Date of sending. Kind of seed.

Brand name (if any), and number of package.

Purity or germination test desired (one or both).

Write a letter stating the number and kind of samples sent so that their receipt may be promptly acknowledged.

Address all samples and communications regarding the same to F. W. Taylor, Experiment Station, Durham, N. H.

OTHER INFORMATION.

Other publications on the subject of seed testing are as follows:

Circulars Nos. 34 and 35, U. S. Department of Agriculture, Washington, D. C.

Bulletin No. S-I, Canadian Department of Agriculture, Ottawa, Can.

Bulletin No. 146, Vermont Experiment Station, Burlington, Vt.

Circular No. 4, Wisconsin Experiment Station, Madison, Wis.

Bulletin No. 115, Iowa Experiment Station, Ames, Iowa.

Bulletin No. 110, Nebraska Experiment Station, Lincoln, Neb.

Seed Bulletin No. 1, North Dakota Experiment Station, Fargo, N. D.

Bulletin No. 83, Bureau of Plant Industry, Washington, D. C.

Bulletin No. 270, Michigan Experiment Station, East Lansing, Mich.

Bulletin No. 394, New York Experiment Station, Geneva, N. Y.

Bulletin No. 198, Kentucky Experiment Station, Lexington, Ky.

Bulletin No. 111, Bureau of Plant Industry, Washington, D. C.

Farmers' Bulletin No. 260, Division of Publications, Washington, D. C.

Bulletin No. 203, Maryland Experiment Station, College Park, Md.

Bulletin No. 159, Minnesota Experiment Station, St. Paul, Minn.

Bulletin No. 312, Cornell University, Ithaca, N. Y.

Extension Bulletins Nos. 24 and 39, University of Minnesota, St. Paul, Minn.

Official Inspection No. 46, Maine Experiment Station, Orono, Me.

Circular No. 59, New Jersey Experiment Station, New Brunswick, N. J.

Twenty-fourth Annual Report, Massachusetts Experiment Station, January, 1912, Amherst, Mass.

Twenty-fifth Annual Report, North Dakota Experiment Station, February, 1915, Fargo, N. D.

Bulletin September, 1916, North Carolina Department of Agriculture, Raleigh, N. C.